

Remarks

Claims 1-36 are pending in the application. Claims 1-36 are rejected. Claims 1, 11, 19, and 27 are amended herein. No new matter is added. All rejections are respectfully traversed.

Claims 1, 11, 19, and 27 are amended to more distinctly claim the invention. No new matter is added.

The invention diagnoses faults of a data network. A plurality of fault data pertaining to said data network is received and filtered to obtain a core of fault data. The data network is queried to generate additional fault data different from said plurality of fault data when said core of fault data is insufficient to identify faults. The additional fault data is received and the core of fault data and the additional fault data is analyzed to identify a fault associated with said core of fault data.

Claims 1-6, 9, 10, 19-32, and 36-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berg (U.S. 5,872,911 in view of Urano, et al. (U.S. 6,289,379 – “Urano”).

Regarding independent claims 1, 19 and 27, the invention, upon receiving a plurality of fault data, filters the fault data and then queries the data network to *generate* additional fault data *different* from the original plurality of fault data. Berg never uses any fault data other than the original fault data. Urano describes selecting log data already acquired. Urano never generates additional fault data. Urano simply decides how much of the old log data to

look at for determining a fault.

More particularly, Berg describes using service impact analysis (SIA) to provide a telecommunications network carrier with real-time information on network failures. In Berg, a network is monitored for faults by collecting fault data. The fault data is assessed to determine an actual service impact at a particular instant in time and the likely cause of the fault. Berg also describes predicting future service impact based on collected historical data of the telecommunications network.

Berg receives the fault data, filters the fault data to reduce the volume, and then correlates the fault data to further reduce the volume of fault data and determine a fault. However, the Examiner admits, and the Applicants agree, that Berg fails to describe querying said data network for additional fault data different from said plurality of fault data when said core of fault data is insufficient to identify faults; receiving said additional fault data; and analyzing said core of fault data and said additional fault data to identify a fault associated with said core of fault data, as claimed.

Urano fails to cure the defects of Berg. Urano describes a method for detecting and confirming an abnormal condition in agent computers communicating with each other and a manager computer. When an abnormal condition is detected, Urano describes analyzing the content of a set of logs for each agent computer stored in non-volatile memory. The Examiner asserts that Urano discloses collecting more detailed information upon detection of an abnormal condition to prove the cause of the fault. However, the more detailed information is based on already collected log information,

see col. 4, lines 35-48, below:

An instruction concerning the rules governing which log is important and which log should be sent to the manager computer 104 are sent, in advance, from the manager computer 104 to the agent computers 101, 102, and 103.
40 This instruction is sent when the system is built and each time the manager computer 104 requests that the instruction be sent. For example, when the load on the network or the manager computer 104 is high, the manager computer 104 sends an instruction requesting to send only the important
45 logs to reduce the amount of logs that are sent; when careful monitoring is required, the manager computer 104 sends an instruction requesting to send more logs including those that are considered not very important.

Underlining added

There, Urano describes a filtering process which prioritizes log information as important and not very important. The Examiner is reminded that the logs, by definition, record past information. The additional information collected by Urano is simply another log that was prioritized as “not very important.” In contrast, claimed is querying said data network to *generate* additional fault data *different* from said plurality of fault data when said core of fault data is insufficient to identify faults. The invention effectively directs the search for data that will result in fault identification. Therefore, Urano, alone or in combination with Berg, can never make the invention obvious.

Claims 2 and 28, 4 and 30, and 5 and 31, recite implementing a set of rules for filtering said plurality of fault data; eliminating redundant fault data in said plurality of fault data to obtain said core of fault data; and correlating said plurality of fault data into recognized patterns of data comprising said core of fault data, respectively. These elements recite the filtration and correlating performed prior to generating the additional fault data, which the combination of Berg and Urano fail to teach.

Claims 6 and 32 recite determining whether said fault is due to a broken link or congestion in said data network. The Examiners reference to col. 10, lines 1-5 of Berg, below, is confusing to the Applicants:

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In the preferred embodiment of the present invention, the displays are provided hourly until the fault is repaired and the faulty network segment is fully operational. It would be apparent to any person skilled in the art that the displays can
5 be provided in other than 1 hour increments as the applications requires.

The Applicants request the Examiner to either point out, with specificity, exactly which words in the referenced section above mean determining whether said fault is due to a broken link or congestion, as claimed, or to reconsider and withdraw his rejection.

Claims 9 and 35 recite displaying network location of said fault; and displaying a cause of said fault. At col. 5, lines 50-60, Berg describes displaying an area of the network that the fault *effects*, see below:

Examples of displays are illustrated in FIGS. 4A and 4B. 55
In the example portrayed in FIGS. 4A and 4B, the fault caused trunk group 311a (described below with reference to FIG. 3) to be unavailable to telecommunications network 300 (described below). Note the display illustrates the effect of the fault on the telecommunications network 300 by a 60
broad line representing the failed trunk group 311a. The *Underlining added*

Claimed is displaying network location of said fault. Berg only displays the fault-effected area, which is far less helpful to remedy a fault than what is claimed.

In claims 10 and 36, the fault data includes performance data from said data network. As stated above, neither Berg nor Urano queries the data network

to generate additional fault data different from the plurality of fault data, as claimed.

In claim 20, the network components are computer systems. In claim 21, the distributing component is a switch. In claim 22, the plurality of fault data is management information base (MIB) information that is generated by said network components and said distributing component in each of said plurality of subnetworks. As stated above, Berg and Urano fail to disclose querying said plurality of subnets to generate additional fault data different from said plurality of fault data when said plurality of fault data is insufficient to identify faults, as claimed.

Claim 23 recites a rule set that is implemented by said network management station for analyzing said plurality of fault data and said additional fault data that are filtered to identify said faults and isolate said sources of said faults. Neither Berg nor Urano describes the additional fault data, as claimed.

Claim 24 recites a rule set that is implemented by each of said plurality of performance managers for filtering said plurality of fault data and said additional fault data. Neither Berg nor Urano describes the additional fault data, as claimed.

In claim 25, the plurality of fault data includes performance data from said data network. In claim 26, each of said plurality of performance managers is a self diagnosing network performance manager (SDNNPM). The claimed performance managers query said plurality of subnets to generate additional fault data different from said plurality of fault data when said plurality of

fault data is insufficient to identify faults. Neither Berg nor Urano describes querying to generate additional fault data, as claimed.

Claims 7 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berg and Urano in further view of Kaffine, et al., (U.S. 6,654,914 – “Kaffine”).

Claims 7 and 33 recite implementing a ping walk through said data network to determine a location of said broken link, if said fault is due to said broken link. As stated above with respect to claims 9 and 35, Berg fails to teach determining a location of a broken link. Berg only determines a fault cause and displays an effected network area, see below:

Examples of displays are illustrated in FIGS. 4A and 4B. 55
In the example portrayed in FIGS. 4A and 4B, the fault caused trunk group 311a (described below with reference to FIG. 3) to be unavailable to telecommunications network 300 (described below). Note the display illustrates the effect of the fault on the telecommunications network 300 by a 60
broad line representing the failed trunk group 311a. The

Berg can never make obvious what is claimed.

Kaffine is directed to fault isolation. Once a fault has been identified by known methods, Kaffine describes injecting test data into the network to isolate the fault as well as to determine whether the fault identification was correct. In contrast, the invention identifies faults. Claims 7 and 33 recite a ping walk through to determine the location of a fault identified according to the invention recited in independent claims 1 and 27, respectively.

Claims 8 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berg and Urano and in further view of Cromer, et al. (U.S. 6,304,900 – “Cromer”).

Claims 8 and 34 recite isolating a source of said fault, if said fault is due to said congestion in said data network. The invention identifies faults based on a plurality of fault data, as well as additional fault data different from the plurality of fault data to identify faults. Cromer receives a single message indicating “a particular counter or timer has reached a threshold.” See col. 3, lines 35-42. Cromer knows the source of the fault at the outset. There is no fault isolation based on a plurality of fault data and additional fault data, as claimed.

Claims 11-15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berg in view of Cromer, Kaffine and Urano.

The arguments asserted above traversing the previous rejections based on Berg, Cromer, Kaffine and Urano are re-asserted in their entirety with respect to claims 11-15, 17 and 18. The Applicants respectfully request the Examiner reconsider and withdraw the rejections.

Claim 126 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berg in view of Cromer, Kaffine, and Urano, and in further view of Marin (U.S. 5,936,940 – “Marin”).

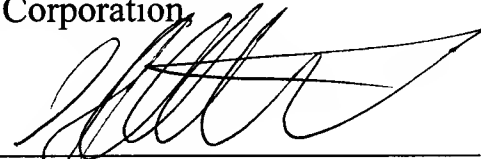
Claim 16 recites determining queue length in network devices; determining delay over a path in said data network; and determining load of traffic over

said data network. As stated above with respect to independent claims 1, 11, 19, and 27, none of Berg, Cromer, Kaffine, and Urano, alone or in combination, describes identifying faults based on a plurality of fault data, as well as additional fault data different from the plurality of fault data to identify faults, as claimed. Marin fails to cure the defects of Berg, Cromer, Kaffine, and Urano. Marin simply determines delay over a network path.

It is believed that this application is now in condition for allowance. A notice to this effect is respectfully requested. Should further questions arise concerning this application, the Examiner is invited to call Applicant's attorney at the number listed below. Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account 50-3650.

Respectfully submitted,
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